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Original Articles.

THE SIGNIFICANCE OF HEMATURIA. A STUDY OF ONE HUNDRED PERSONAL CASES.*

By ARTHUR L. CHUTE, M.D., BOSTON.

THE day I received your Secretary's invitation to read a paper before you, I saw a man who had passed bloody urine from time to time over a period of about ten years, without making any real effort to find out the cause of his trouble. Urinary bleeding is rather terrifying to the average patient and usually sends him post-haste to his doctor. This man was no exception, and consulted a physician at one of the hospital clinics where he was given internal medication and advised to await developments. As the bleeding reappeared from time to time, this man became rather accustomed to it and as nothing further happened, he let his trouble go on without making any attempt to remedy the condition until at the time I saw him, ten years after its start, the bleeding had become much more profuse and he was suffering considerable pain, due partly to his bladder becoming distended at times with clot and partly

to an infection of his bladder; this infection practically always comes to any bladder that is chronically overdistended with urine.

One cannot say, perhaps, that this medical man's advice, that the patient await developments, was so very bad in this individual instance; if it had been, this patient would not have been living ten years later. On the other hand, one cannot surely say that the advice was real good, as this man was found to have, at the time I operated upon him, a bladder that was full of papillomatous tissue that was microscopically papillary carcinoma. There is every reason to suppose that there would have been less likelihood of this condition returning if this patient had been operated upon ten years before, which might have been done had his medical adviser urged him to be carefully investigated.

With this case in mind, I have gone over one hundred cases of hematuria from my records; cases that are as nearly consecutive as possible, in order that they may show a fair average of these cases as they present themselves to us for treatment. I have done this to see, if by chance, I am too concerned about hematuria in general; to determine, if possible, if there is really any considerable proportion of these cases of urinary bleeding that have their origin in some relatively trivial cause

* Read before the Worcester Medical Society, Feb. 11, 1920.

such as would justify this man's physician in counselling him to await developments, or to determine, on the other hand, whether my own view is justified by the facts, and that this man's doctor was taking a very great risk when he advised a patient with hematuria of unknown origin, that it would be safe for him to wait and let the condition go practically uninvestigated for an indefinite time.

The cases that I have studied have, with the exception of a very few, which have been included because of their special interest, been taken in the order in which they have presented themselves, and are, I believe, fairly representative of a series of cases of this sort. I have excluded such cases of hematuria as have followed injury, of which there have been four or five in the three years that these cases cover. The cause and usually the location of the bleeding in these cases are perfectly evident. I have also excluded the cases that one sees accompanying acute inflammations of the bladder: for the most part, they are related to specific urethritis. There are further, a few cases that I have excluded, because for one reason or another, it has not been possible to arrive at a definite conclusion as to their cause; in most instances these patients were seen but once. I have no particular reason to suppose that the including of these undiagnosed cases would have materially changed my figures.

Hematurias are often divided into several types and at times a good deal of diagnostic importance is placed upon these different types; more than I believe the facts justify. The cases of "initial" and "terminal" hematuria, those instances where the bleeding is limited, in the one case to the first, and in the other to the last of urination, usually accompany lesions that are located either in the deep urethra or just at the bladder outlet. Thus certain types of bleeding have some suggestive value as to the probable location of a bleeding lesion. Bleedings of this type most often, though by no means invariably accompany cases of urethritis.

Again, hematurias are often divided into those that are accompanied by pain and those that are not. I think that one may draw some conclusion from this, although nothing that is

very definite. A painful hematuria is more often of bladder origin than it is of renal, but, on the other hand, in many of the bleedings that have their origin in the bladder, pain is not present until such time as there has been some infection or the bleeding has been so profuse as to distend the bladder with clots. Hematuria of renal origin, as a rule, gives pain only when the bleeding is sufficient to cause clotting in either the kidney pelvis or the ureter and to excite violent expulsive efforts on the part of the kidney pelvis and ureter. Pain of this type is usually colicky, but at best the pain is only suggestive of the location of the bleeding and tells us nothing regarding the lesion upon which it depends. In most instances the hematuria that these patients have shown has been the so-called total hematuria where the urine has been uniformly bloody.

The type of hematuria that is present is, however, of relatively little help in making an actual diagnosis of the source and particularly of the cause of bleeding in a very large proportion of cases. Whether a given hematuria is initial or terminal, painless or painful, constant or intermittent, one must resort in all but the simplest cases to the use of instruments of precision to determine its source and cause—facts that must be established before one can suggest the proper treatment or probable outcome in a given case. Our greatest help in determining the location and cause of a hematuria is the cystoscope; if the bleeding has its origin in the bladder, the use of this in itself is usually sufficient to determine the nature of the bleeding, though in most of the bleedings that have their origin above the bladder, cystoscopy must be combined with catheterization of the ureters and the use of radiography. In a large proportion of cases, bleeding lesions of the kidney will need to have pyelography carried out in order to determine their cause accurately. This requires a combination of cystoscopy and radiography. No study, no matter how minute, of the character of the bleeding or of the accompanying symptoms can take the place of this investigation.

The hundred cases of hematuria that I have looked up have depended upon the following lesions of the urinary tract:

Bladder infiltrating growths	32
Bladder massive papillomata	11
Bladder small papillomata	7
Hypernephromata	8
Prostate, benign	7
Prostate, malignant	6
Nephritis	7
Renal tuberculosis	5
Hydronephrosis	3
Stone in kidney	4
Stone in ureter	3
Stone in prostate	1
Bantl's disease	3
Polycystic kidney	1
Diverticulum bladder	1
Papillary cystitis	1
	100

When one looks over this list, one is impressed with the fact that it contains relatively few conditions in which one can afford to procrastinate if he is to give his patient his best chance. In this list there is not a single case that can be accounted for by oxaluria or a shower of uric acid crystals; conditions that have been called upon, all too often, to account for a hematuria. On the other hand, of these cases of hematuria, just one-half were due to tumors of the bladder, and of these 50 cases of tumor of the bladder 32 were of the infiltrating type of bladder tumor, while eleven more were of the massive type of papilloma, a type of tumor that very often recurs. Only seven of these bladder tumors were of the type that one might consider more or less trivial, that is, of the single small papilloma, but often even tumors of this sort are not to be regarded as entirely benign. I believe, in fact, that every tumor of the bladder should be looked upon as potentially malignant, if indeed, not actually malignant, since a very large proportion of those that do not infiltrate the bladder wall, or lead to metastases, wear the patient out by hemorrhage or lead finally to the destruction of the kidneys through the back pressure and infection that they produce. In this series of hematuria, besides the tumors of the bladder of the distinctly malignant type, there were eight hypernephromas as well as six cases of cancer of the prostate. This makes 64% of the hematurias due to new growth; conditions such that if one is to make an attempt at intelligent treatment he has no time to waste in sitting by and awaiting developments.

Let us take up briefly the question of tumors of the bladder. As I have said, I think that all should be considered potentially malignant if not, indeed, actually so. In the infiltrating

growths the outlook for favorable surgical results is, of course, poor. On the other hand, nothing is to be expected from conservative treatment. I have felt, and still feel, that in infiltrating growths of the bladder wall that are favorably situated, an attempt at wide removal should be made, except in such cases as are having a lot of pain in the lower extremities. This radiating pain in the extremities usually indicates that the condition has infiltrated deeply into the tissues of the pelvis and has involved the nerves running to the legs, and that there is practically no hope that one will be able to remove a growth of this sort completely. As a whole, the results of these cases in which one excises infiltrating growths of the bladder are not very satisfactory, but every now and again one sees instances that are very encouraging, and all one saves is clear gain, for without operation all is lost. For example,—within a week or two, I learned of a patient upon whom I operated seven years ago, removing a cancer involving the region of the right ureter which required the excision of a mass fully as large as a silver dollar and the reimplanting of the ureter. This was done with little hope that I would be able to stay the progress of the disease but more from the feeling that the patient should have her chance. The patient remains apparently perfectly well. Considering the fact that these patients are doomed unless one does subject them to operation, I feel that it is right to offer them their chance though we know in the great majority of cases that the result is going to be, at best, simply palliative. The insistence with which one may urge operation upon these patients with infiltrating growths of the bladder naturally depends to a considerable degree upon the location of the growth. Growths that are situated at the upper and back part of the bladder, where, unfortunately, they are rare, are much easier to remove than those situated laterally or especially those situated anteriorly. When it comes to these growths that are so situated as to involve the bladder outlet, and where, in order to get rid of the growth, one must remove the whole bladder and either make urinary fistulae in the loins or transplant the ureters into the bowel, one cannot urge operation very strongly, because of the fearful mutilation that results in the few cases who survive the operation.

I have given up the wide intraperitoneal re-

sections of the bladder that we used to carry out for infiltrating bladder growths. I have reached the conclusion that they do not give enough better results as regards freedom from recurrence to justify their greater operative risk. I content myself by removing the growth with a margin of at least a centimeter on all sides. I remove the full thickness of the bladder wall, reimplanting the ureter, if this comes within the area. I have used radium in the treatment of a few infiltrating bladder tumors—this has been used in conjunction with the operative removal of the growth. In one case, especially, we used radium emanations on two occasions, inserting the capsules through the suprapubic opening. Following both these applications there was a very marked local reaction—but this patient, who seemed to me decidedly unfavorable, was seen a month or so ago—more than two years after operation; he then had no subjective symptoms and looked to me in perfect health. I did not, however, have a chance to examine this man's bladder and his condition may be less favorable than I believe it to be. The treatment has so impressed me that I have made arrangements which I expect will, in the near future, allow me to carry out the combined surgical and radium treatment of these tumors, in a sufficient number of cases to be able to draw more accurate conclusions as to its value.

Occasionally the purely palliative procedure of cauterizing deeply a growth that it is impossible to remove is attended with a degree of palliation that is worth while, but in many instances it is like the formation of a permanent suprapubic fistula for the same purpose—of doubtful advantage.

With the massive papilloma in which the base is not infiltrated, the outlook as regards cure is, on the whole, much more favorable than with the infiltrating growths. One does get local recurrences in tumors of this type, and apparently certain tumors of this sort that are allowed to remain, take on malignancy and become infiltrating tumors of the bladder. I dare say that some of the infiltrating bladder growths, in which the history is of occasional bleeding that has extended over a long time, were originally these massive papillomata which finally infiltrated the bladder wall as well as sloughed, thus giving the typical, irregular, ulcerating surface, with its base infiltrating the bladder wall on all sides, that

one sees in carcinomata of the bladder. These massive papillomata should be removed as early as possible and with reasonable wideness. In dealing with tumors in general I doubt if it is of any real importance whether one makes his incision with a cautery or with a knife.

The small papillomata where there is a single little frond of tissue are usually removable by use of the high frequency current. As they often grow quite rapidly, it seems to me that this should be done as early as possible. If the high frequency current does not take care of them promptly they should be removed by opening the bladder and excising the tumor with a moderate area of the mucous membrane surrounding it. One tumor, supposedly of this type, that I operated upon a little less than two years ago, had apparently been stimulated to activity by applications of the high frequency current. I had seen this patient and suggested this treatment and then had not seen her for a time. The growth had increased and though I removed it widely, resecting and reimplanting one ureter, it recurred and she died less than a year afterwards. This patient and another one that I saw about the same time, with an inoperable infiltrating tumor, had been operated upon for papillomas, respectively 18 and 14 years before they came under my care.

I feel decidedly that one is not justified in counselling delay in any hematuria that comes under his notice, unless one can be sure that the hematuria he is considering is not from a bladder tumor, since at least three-quarters of these are cases that require immediate treatment in order that they may have any chance of cure.

In my list there are twenty-eight cases in which the hematuria was of renal origin. These were: 8 hypernephromata, 7 bleeding nephritis, 5 renal T. B., 4 stones in kidney, 3 hydro-nephrosis, 1 polycystic kidney. In these cases of renal hematuria the necessity for operation differs greatly; but, unfortunately, the cases in which the necessity for operations is least urgent often resemble closely the cases in which operation is most urgently indicated. The cases in which operation is least urgent are the various types of bleeding nephritis. In one type of nephritis, which I refer to as hemorrhagic nephritis, we see a chronic kidney of the cardio renal type with high blood pressure, a low gravity urine that is low in solids and ability to throw out dyes, that presents a mod-

erate grade of hematuria. Cases of this type are not common and operation is not only not helpful but it is to be avoided as capable of doing harm. The other type of bleeding nephritis, I think, is usually of inflammatory origin and is known under several names, thus essential hematuria, focal nephritis, and varix of the papilla of the pyramid are, I believe, simply variants of the same process. In one case of this sort that I saw, the kidney was removed and carefully examined. While it presented superficially the appearance of a varix of the papilla, examination of the tissue of the pyramid showed the lesions of a chronic nephritis of the parenchymatous type; the dilated veins seem to be secondary to this.

In this type of nephritis the bleeding is rarely such as to threaten life. Operation is not strongly indicated, though it practically invariably stops the bleeding. It is not because operation is important in these cases that they are operated upon, but because a definite diagnosis, a differentiation between nephritis and hypernephroma, in this type of case, is extremely difficult to make without cutting down on the kidney. In many ways these cases of bleeding nephritis simulate *early hypernephroma* and I know of no sure way to distinguish between these two conditions in the early stage except by cutting down upon the kidney and exploring it. The typical hypernephroma, the advanced one, shows a perfectly characteristic picture, a very considerable mass on palpation as well as marked deformity of the kidney pelvis as seen in the pyelogram. The beginning hypernephromata, however, show very little change, either in size of the kidney or in deformity of the pelvis. The fact that hypernephromata, when removed early, give good results; that when removed late, the results are so unsatisfactory as regards recurrence; the fact that in so many instances the disease is so far advanced at the time it is recognized that it is impossible to remove the kidney; all these make me feel that any bleeding lesion of the kidney demands at first most careful study, and then if there is a question of hypernephroma, a careful exploratory operation, in order to determine that one is not dealing with an early hypernephroma. If it is found at operation that a suspicious renal bleeding is from a focal nephritis, simple decapsulation rarely if ever fails to give relief.

In the case of the other renal lesions that

produce hematuria the indications for early operation are less imperative than with the hypernephroma.

In this series of 100 cases of hematuria there have been five instances where bleeding was the result of a renal tuberculosis. In none of these instances was the bleeding profuse enough to modify the usual rule regarding the treatment of that condition which, as I understand it, is in case of unilateral renal tuberculosis to remove the affected kidney as soon as the diagnosis has been definitely made. In some cases of renal tuberculosis, however, hematuria is severe and in two instances that I saw several years ago, instances not included in this list of cases, the hematuria was so profuse as to lead me to do a suprapubic cystotomy. There was so much bleeding in these cases that it was impossible to use a cystoscope and it was believed that a hemorrhage of so marked a nature could have its origin only in some bladder tumor. The opening of the bladder did allow me to rule out the bladder as the source of hemorrhage and helped in determining which was the diseased kidney; however, it is certainly not a justifiable procedure on that score and I do not believe that I should have to resort to this maneuver today, under similar circumstances; but of that I cannot be sure.

Among the cases of stone in the urinary tract that have caused hematuria, there have been four cases of stone in the kidney. These were recognized by radiography and removed. It seems to me that any kidney that contains a stone is threatened with ultimate destruction unless that stone is removed. This destruction may take place in either one of two ways: in one, the slower way, the destruction of tissue follows pressure by the stone as it increases in size; this is naturally slow; the other and the more common way for destruction to take place is to have added to a moderate increase in size of the stone an infection which destroys the kidney very rapidly, and this latter probability is the real cause, in my mind, for advising the removal of practically any stone that we find in a kidney, unless in that particular individual there exists some special contraindication to operation.

As regards stone in the ureter there have been only three that have presented any considerable grade of hematuria. The mere fact that a ureter stone causes bleeding is not a reason why it should be treated any differently

from ureter stones in general. My feeling is that a ureter stone, which is not accompanied by urinary infection or temperature, and which is progressing steadily toward the bladder, is a perfectly proper one to treat expectantly; that, on the other hand, when a ureter stone causes repeated attacks of severe pain; when there is evidence of kidney infection or even considerable increase in size of a kidney, whose ureter contains a stone, or when a ureter stone remains in one position for a long time and becomes incarcerated, so to speak, it should be removed. The incarcerated ureter stone, even if quiescent, is, in my opinion, a menace to its kidney since it often causes inflammatory conditions or conditions that at least render the kidney especially susceptible to infection and which in time will lead to its destruction. If a stone is allowed to remain incarcerated in a ureter for a considerable time it produces a formation of fibrous tissue in and about the ureter that may cause stricture of the ureter with its baleful effect on its kidney, even after the stone has been removed. Its removal should take place before these changes are brought about.

A hydronephrosis, even one that is not very large, may lead to bleeding, as happened in three cases in this series. The type of hydronephrosis that has its origin in an obstruction due to a supernumerary vessel, and which we are able to recognize more and more frequently by means of pyelography, seems to be a type that is quite prone to cause hematuria. These hematurias have for the most part been absolutely without symptoms other than the bleeding, and have required no further treatment than cutting the extra vessel. It would help us greatly in conserving kidneys if more hydronephroses, which are usually so devoid of symptoms in their early stages were indicated early in their course by a sharp hematuria. I look upon hematuria in hydronephrosis as a beneficent symptom that may bring the patient into our hands in such season that a conservative operation may be done.

In one instance in this list I operated upon a polycystic kidney which was bleeding in a way which seemed to me to threaten life. This condition was not recognized until the kidney had been exposed. As the mass was a very large one, I went in by the abdominal route, and was able by palpating the better kidney to determine that while it, too, contained a few

cysts, the cystic disease on that side had not progressed very far. This illustrated the fact that has been without exception in my personal experience, that congenital cystic disease of the kidney is always bilateral, though as in this instance, the disease in one kidney may be much more marked than in the other. It seemed to me that in this case the patient's interests would be best served by the removal of the bleeding cystic kidney and this was accordingly done. This is one of the few cases that is not consecutive, but I included it because of its rarity and interest. This operation was done four or five years ago and the patient, who was seen last summer, has remained relatively well since.

Stone in the prostate is a comparatively rare lesion and if it is not causing pain or obstruction to urination, its removal is not urgently indicated. The condition is too rarely seen to warrant us in considering it at this time.

The malignant prostate, to which our attention is first called by a hematuria, in a small proportion of cases, is a condition on which I feel one should operate only if a certain amount of obstruction to urination is present. The removal of the malignant prostate with the idea that one is going to prevent the progression of the malignant disease seems to me very questionable, although once in a while one does see a case in which the removal of a prostate that was malignant clinically and microscopically has been followed by a long period of freedom from symptoms, so much so, as to make one believe that a cure of the condition, clinically speaking, had been effected. These instances, however, are extremely rare and for the most part operation on malignant prostates should, I believe, be restricted to those cases that are having a good deal of trouble with their residual, and it should be carried out as a palliative measure rather than with any expectation of curing the condition. The operation should, I believe, be carried out by the lower route, as in a good number of these cases the tumor is too dense to make enucleation from above possible.

In this series of cases I have found only seven cases where obstructing prostates of benign type have caused marked hematuria. I believe, however, that the proportion is larger than this, and that I have, in going over my records, overlooked some of my cases of benign obstructing prostates that have presented hema-

turia as a marked symptom. Although my figures do not show it, I am strongly of the opinion that hematuria occurs considerably more frequently in the big, overgrown, benign prostate than in the malignant prostate. This, however, is not shown by my figures and may simply be an erroneous impression on my part. The presence of hematuria in a patient presenting an obstructing prostate does not materially modify the course which we should pursue regarding the prostate. In two instances where a man with a big prostate has bled profusely I have found a small papilloma as well as an obstructing prostate. In the first of these cases it was not recognized at the time of operation but was recognized later and removed.

There have been two cases of Banti's disease in which the diagnosis has been backed up by two competent medical consultants. These two cases occurred several years ago and were rather dragged into this series as they show an unusual cause for hematuria. There has likewise been a third case in which the probable diagnosis of Banti's disease depends solely upon my unconfirmed opinion. All these cases, as one might expect, progressed moderately rapidly to a fatal termination. They all presented a grade of hematuria which varied from slight to moderate, accompanied by a large spleen, diarrhea, long continued temperature, and changes in the blood which consisted in a diminution in the red cells (in one case to 2,700,000) with a lowered hemoglobin; there were no changes in the character of the blood cells.

The remaining cases in this list were not of great general interest and I will not describe them.

I believe that this series of cases of hematuria, which probably represents pretty much the ordinary run of such cases, proves very definitely that hematuria is not a condition to be looked upon lightly, that in more than one-half of the cases it is indicative of an extremely serious condition which is only remediable if recognized and treated early; that in only a small proportion of cases, more especially in the cases of bleeding nephritis, can it be said that it makes no real difference whether they are attacked early or not, that in these very cases, however, it is essential that they be investigated for the simple reason that in most instances without this investigation it is utterly impossible to distinguish them from

cases of hypernephroma where an early diagnosis and early removal of the growth are essential if one is to accomplish anything in this class of tumors of the kidney.

My opinion is that a study of a considerable number of cases of hematuria compels us to conclude that the physician who told his patient that he might safely ignore his bleeding showed poor judgment medically; that although he was partially right, this was due to good luck rather than to sound medical judgment.

CHRONIC FATIGUE: DIET, EXERCISE, AND OTHER FACTORS IN TREATMENT.*

By JOHN BRYANT, M.D., BOSTON.

Introduction.

The paper which follows was read under the title, "Therapeutic Procedures for the Relief of Decreased Inhibition." Use of the term "Inhibition" introduced a physiological factor for discussion, and tended to obscure the simple clinical chain of events which it was desired to present. The physiological aspect of the paper has therefore been eliminated.

Argument.

In many invalids, especially of the chronic intestinal type, there seems to be a lowered threshold for the sensory stimuli of all sorts which result in motor action, both mental and physical. Apparently the resistance normally interposed by the higher centers like a rheostat in the reflex arc, is absent or short-circuited, with the result that energy is uselessly dissipated in all directions. In a word, the control mechanism is out of order.

As a result, the patient always reacts excessively to every form of mental or physical sensation.

If a patient uselessly dissipates energy from morning until night, unless his supply of energy is greatly above normal, he will become fatigued.

Acute fatigue may become chronic. A state of chronic fatigue is commonly present in the chronic invalid. No return of the invalid to health is possible without relief from this chronic fatigue. Therefore, the resistance of the patient to incoming mental and physical stimuli must be raised as nearly as possible to

* Read, in part, at a meeting of the Boston Society of Psychiatry and Neurology, Nov. 21, 1919.

normal. Rational treatment for excessive reaction to sensory stimuli, logically follows upon an understanding of the etiology of this over-reaction.

Etologic Factors Productive of Over-Reaction to Sensory Stimuli.

Among the factors tending to produce a condition of over-reaction to sensory stimuli may be mentioned the following:

1. In the child.
 - a. Poor (nervous) heredity.
 - b. Lack of mental discipline in youth.
 - (1) Poorly trained parents.
 - (2) Illness in youth. (Parents otherwise capable are often afraid to discipline a sickly child.)
 - c. Nervous exhaustion in youth.
 - (1) Illness, acute.
 - (2) Illness, chronic.
 - (3) Organic lesions.
 - (4) Mental strains.
 - (5) Over-exertion physically.
2. In the adult.
 - a. Excessive mental or physical strains in a previously normal adult.
 - b. Mental or physical strains not in themselves excessive, acting upon a subnormal adult, on the physiological principle of the repetition of minimal stimuli.
 - c. Results of lack of mental training in youth.

Treatment of Over-Reaction to Sensory Stimuli.

Lack of mental training in youth, necessitates training of the adult in mental poise which should have been unconsciously acquired in early youth. This mental training is more difficult in proportion to the increasing resistance shown by the adult to the formation of new habits. On the other hand, this mental training is proportionately easier because of the adult brain which can be brought to bear upon the problem, and in consequence of the intensity of the desire for health which the average patient of this type displays.

The central problem is the increase of conscious mental control. This is accomplished on the one hand by reducing to a minimum the possibility for harm of all stimulants or irritants either external or internal. On the other hand, it is necessary to increase by practice the power of resistance of the patient to the in-

coming sensory stimuli. By this means, the so-called threshold for stimuli may be raised toward normal. It is essential to realize that the normal control mechanism is seldom absent although it is frequently rusty from disuse.

Among the potential internal stimulants or irritants may be mentioned mental conflicts, physical exertion, drugs, and diet.

Among the potential external stimulants or irritants may be mentioned people, things, places, weather, rapid motion of all sorts, and other such factors as are commonly grouped together under the name of environment.

In general, therapy takes two forms. Undesirable things from within or from without may be eliminated as far as possible. This is, so to speak, a passive mode of assistance. Many such procedures will readily suggest themselves. Rest, applied in repeated small doses, is obviously a valuable preventive remedy, but it is also largely a passive mode of assistance.

Two active methods of assistance deserve special consideration. (a) The first procedure is the utilization of a physically bland and chemically non-irritating diet for the promotion of internal rest. (b) The second procedure is the employment of a special form of slow exercise, by the use of which much may be accomplished in the education or reëducation of the control mechanism.

a. Diet.

The foremost essential in the regulation of diet for the over-reacting patient, is the temporarily complete elimination of meat and fish, and the thorough cooking and careful serving of all foods allowed.

The restriction of milk to the few ounces daily necessary to make food palatable, is desirable. Eggs should be allowed only when combined with starches, as in cake or puddings.

The two best substitutes for meat and fish are gelatine desserts and cream cheese. There is, however, no necessity for worrying about a shortage of proteins. The chemists tell us that vegetable proteins are as easily available to the organism as the animal proteins, and with the liberal use of the heavier vegetables, there is no danger of a shortage of proteins.

The accessory of food factors are cared for by the use of raw fruits, uncooked vegetables in the form of salads, and butter of good quality.

This strict diet is maintained for from two weeks to a month. At the close of this period, there is a gradual resumption of general diet, but on an intermittent basis. At first, an unrestricted diet may be allowed for one meal or for one day in the week. The second week there may be two days of unrestricted diet, and in the third progressive week the patient may arrive at unrestricted diet every second day. It is unlikely, however, that the over-reactive patient can ever profitably take unrestricted diet on continuous days for any great length of time without suffering harm from excessive chemical stimulation, since in these patients there very frequently exists an intestinal abnormality such as ileal regurgitation, which complicates the normal method of disposition of the end-products of digestion.

b. Exercise.

A very direct method of raising the action of the control mechanism toward normal, is the employment of a special type of physical exercise which has for its immediate object the sharpening of muscle sense perception in especial relation to balance and physical poise. Exercise utilized for this purpose is carried out at the very slow rate of about ten seconds per linear foot of distance. One simple exercise for each main muscle group has been developed, and in the Army a routine was employed on my Convalescent Service at the Walter Reed General Hospital, which took for its full completion about one hour of time. The same routine has been utilized for private patients, with very considerable success. Parallel with the increasing power of physical control, comes a noticeable increase in mental poise.

Patients become able to pass without excessive mental distress through small crises in their lives which would have previously left them prostrate. This gain in mental poise is certainly greatly appreciated by the patients. A secondary result, of which patients almost always speak, is the evaporation of mild phobias. These phobias seem to have been for the most part based upon fear. The fear is possibly due in part to inability to handle properly the locomotor mechanism, involving a partial loss of the sense of balance with the consequent uncertainty of action and added mental strains which must result.

The two most usual phobias observed have

been the fear of high places and the fear of crossing streets in city traffic. In addition, there are, of course, such small phobias as the fear of meeting people, and the fear that the ordinary daily routine cannot be completed without excessive exhaustion. These also tend to disappear.

Summary.

1. The world is full of persons, mostly chronic invalids, who react excessively to sensory stimuli of both mental and physical origin.
2. One obvious ultimate result of this continued over-reaction to sensory stimuli is chronic fatigue. The patient will not recover until the chronic fatigue is relieved.
3. In order to relieve the chronic fatigue, its cause must be attacked.
4. In Diet and Exercise, we have available two valuable but apparently too little appreciated active therapeutic procedures for an attack upon the problem of over-reaction to sensory stimuli. Some details of the use of these two procedures have been presented.

Conclusions.

1. The chronic invalid often suffers from chronic fatigue.
2. Recovery of the patient who suffers from chronic fatigue depends in large measure upon the possibility of decreasing or eliminating over-reaction to sensory stimuli.
3. Diet and Exercise, properly used, are valuable factors in
 - a. Decreasing over-reaction to sensory stimuli.
 - b. Eliminating chronic fatigue.
 - c. Promoting a return to health of the chronic invalid.

A CASE OF INFECTION OF THE KNEE-JOINT TREATED BY EARLY AND CONTINUOUS ACTIVE MOTION.

By F. B. LUND, M.D., F.A.C.S., Boston.

[From the First Surgical Service, Boston City Hospital.]

INFECTION of the knee-joint has, in the hands of the majority of surgeons, caused much trouble and anxiety. At best immobilization has had to be continued for a long time and, combined with infection, inflammatory swelling, and formation of scar tissue, has fre-

quently resulted in permanent adhesions and a stiff knee. In severe cases the transverse incision across the patella tendon in front of the knee-joint has sometimes been required. So many cases of infected wounds of the knee-joint resulted from the war that the military surgeons had an experience which led to great improvement in the treatment of knee-joint wounds. Immediate suture without drainage after thorough cleansing and excision of the wound, so-called debridement, led to great improvement in results. After infection took place and the surgeons had actual suppuration in the joint to deal with the results were not so good.

McWilliams and Hetzel gave, in the *Annals of Surgery*, September, 1919, a very interesting résumé stating that in seventy-three cases of war wounds of the knee-joint sixteen became infected. In thirteen of these sixteen cases, in the final showing, three had had amputations, one resection, four resulted in ankylosis and four died. These were all treated by modified old plan, i.e., with somewhat earlier motions. These authors believe that the Willems treatment would have produced a very much better result than this. Willems in one hundred cases, eighteen of which were accompanied by purulent synovitis of a virulent type, chiefly streptococcus, had no deaths and no amputations. There was one resection and two stiff joints. To the McWilliams paper the reader is referred for the details of treatment.

To the courage of Dr. C. Willems, of Ghent, Belgium, Director of the Hoogstade Military Hospital, we owe our present knowledge that it is possible in certain cases in healthy young adults such as soldiers, to treat infections of the knee and other joints, after incision for drainage, by immediate active motion. By this method excellent results may be obtained in very much less time than by the older procedures. Motion of the joint results in actual expression of the pus every day and adhesions are not allowed to form. I wish to present a case with photographs showing the results attained in an infection of the knee-joint following a bullet wound, by immediate and continued active motion, after incision for drainage.

On December 7, P.M., an adult, 43 years old, received a bullet wound in the occiput, and the right popliteal space. X-ray showed a flattened bullet in the back part of the knee-joint,

apparently located in the capsular ligament. The wounds were shaved and cleaned and dressed at the relief station to which he was admitted, and a day later he was taken to the City Hospital, where he remained four days. His temperature rose to 100. There was some reddening of the skin and evidence of fluid in the knee-joint. On the twelfth of December an incision an inch and a half long was made on either side of the patella and a large amount of seropurulent fluid escaped. A three-inch incision was made in the mid line of the popliteal space and the dissection carried down to the inner side of the popliteal vessels and after considerable difficulty the bullet was found in the capsular ligament projecting into the knee-joint. A rubber tissue drain was placed in the popliteal space and a dry sterile dressing applied. Active motion was started the next day. The patient coöperated very well in this and was quite proud of the amount of motion in his damaged leg. This was regularly continued daily, the temperature gradually going up, until January 3, when the collection of pus in the upper part of the popliteal incision was drained by the insertion of forceps, and a rubber tube put in. On January 9, a pus pocket above the upper end of the wound in the popliteal space was opened. At this time the active motion was not as free as it had been on account of the swelling and tenderness in the



FIG. 1.

FIG. 2.

popliteal space. He was then put under Carrel-Dakin treatment under which the amount of pus gradually diminished. The active motion was continued though not quite to the same extent as at first. Through the month of March the active motion was still kept up and on April first he was up on crutches with 45° of flexion and perfect extension. The photographs (Figures 1 and 2) show the amount of flexion and extension on the date of discharge from the hospital. He was then walking freely and actively without the slightest limp. There can be no question in this particular case that active motion from the first gave an excellent result, although recovery was delayed by the complication of the abscess in the popliteal space. The man was a strong, active fellow and coöperated very well. In feeble or nervous patients it would be difficult to accomplish as much. While it may not be possible in all cases of infected knee-joint to bring about this happy consummation, there is no question that early mobilization and active motion will in many cases greatly shorten treatment and improve the final result. To one who has known the time consuming and exhausting difficulties and dangers, as well as the permanent stiffness of the knee which have usually followed sup-puration, the recovery of this patient seems really remarkable. Something has certainly come out of the war in regard to our treatment of suppurating joints.

Book Reviews.

Surgical Aspects of Typhoid and Paratyphoid Fevers. By A. E. WEBB-JOHNSON, D.S.C. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Sq., E. C. 1919.

In this little book of less than 200 pages, the author has covered a large series of cases observed under most opportune circumstances. As an amplification of the Hunterian Lecture for 1917 the book is of especial interest historically in tracing the early records of typhoid fever made by investigators since the disease was first evidenced in 1643 during the Civil War in England. During the present war the knowledge of typhoid and paratyphoid fevers has been greatly increased. It has been suggested by Prof. Webb-Johnson that the

spleen is an important feature to be considered in the "carrier" problem, and many other interesting ideas, formulated as a result of modern practice, are clearly explained to the reader. The subject-matter with reference to these groups of infections is arranged under the following headings: Historical Sketch and Introduction; General Review of Surgical Complications; The Alimentary Tract; The Spleen; The Liver, Biliary Passages, and Pancreas; The Cardio-Vascular System; The Urinary System; The Genital Organs; Parotitis; The Respiratory System; Joint Complications; The Muscular System; Bone Complications; Miscellaneous Abscesses; Eye and Ear Complications; Surgical Aspects of the Carrier Problem. For the surgeon who may be called upon to deal with any one of these diseases, the last chapter is one which will attract considerable attention. The book is well written, splendidly illustrated, and is a valuable addition to the present knowledge of the subject of typhoid and paratyphoid fevers.

The Practical Medical Series. Vol. IV. By BERNARD FANTUS, M.F., and WILLIAM A. EVANS, M.D. Chicago: The Year Book Publishers. Series 1918.

This book is one of a series of eight volumes published at monthly intervals during 1918, covering an entire field of medicine and surgery. This arrangement of publication makes it possible for the physician to secure the entire series or any one particular review, should he desire only consideration of a certain branch of medicine or surgery. Volume IV. of this series of books deals with pharmacology and therapeutics and with preventive medicine. Under each of these headings much that is of value to the general practitioner and to the specialist as well, is summarized in a clear and concise manner. Both authors have handled a vast amount of material and presented in an intelligent way only what was deemed to be of primary importance. The technique of the administration of a particular prescription is emphasized especially in the section on Pharmacology and Therapeutics. A chapter on War-Time Prescribing is very pertinent and the subjects of Electrotherapy, Restorative Therapy, Functional Therapy, Toxicology and Non-Pharmaceutical Therapeutics are each clearly treated. Under Preventive Medicine, chapters on Medical Sociology, Sanitation, Food, Personal Hygiene, Hygiene of School Children, Contagious Diseases, and Industrial Hygiene receive an appropriate share of attention. A great many references from foreign journals, as well as from our American journals, are quoted in both sections of the book.

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LICENSED ATTENDANTS.

THERE was introduced in the Legislature this year on the petition of Mrs. Anna L. Coolidge, herself a trained nurse, a bill (House 820) to provide for the licensing of attendants by the Board of Registration of Nurses. It was referred to the Committee on Public Health and was unanimously reported in a redrafted form, as House 1603, on April 14. It came before the house committee on Ways and Means, which, after a hearing at which several proponents and no opponents of the measure appeared, reported that the bill should be referred to the next General Court. The House so voted, thus killing the bill for this year.

The bill provides that applicants of eighteen years of age, of good moral character, and holding "a certificate showing graduation from a course of at least nine months' training, including six months practical experience given by a school for the training of attendants or a

hospital or sanatorium, approved by the board, shall, upon payment of a fee of two dollars, be examined by the board and, if found to be qualified, shall be registered, with a right to use the title "licensed attendant."

Another section provides that until January 1, 1923, an applicant "who has had three years' experience in the care of the sick, and whose qualifications to be registered as a licensed attendant are certified to by three physicians" shall be similarly registered. This provision is intended to safeguard the interest of those who have already undertaken the care of the sick. Another provision states explicitly that "the act shall not apply to the gratuitous nursing of the sick by friends or relatives, nor to the acts of any person nursing the sick for hire who does not assume to be a licensed attendant or a registered nurse." The other provisions deal purely with matters of administrative detail.

This simple bill is an attempt to provide properly qualified attendants for those sick who do not need or cannot afford the services of the highly trained "registered nurse."

The tremendous expansion in the field of opportunity open to the registered nurse has made, in spite of the number of our training schools, a great scarcity of nurses available for ordinary private work. The opportunities opened to women in many lines during the last few years have lessened the number of applicants for our training schools. The long course of training compels the need of high fees after graduation. All of these factors have combined to make the supply of nurses far below the demand. The needs of the public are not met. The demand for women competent to care for the sick in ordinary conditions is pressing; in an epidemic it would be overwhelming. The need of the hospitals of securing the services of capable women to do much of the routine work now done by pupil nurses is also becoming pressing. The training of attendants in our hospitals would do much to meet both of these needs. Ought we not as physicians to interest ourselves actively in this measure of relief? There is a fear that certain training schools for nurses, which for one reason or another find it hard to secure desirable applicants, may find it harder still to secure applicants if schools for attendants are established. Perhaps the fear is justified. If

so, changes in those training schools are called for. Such a fear cannot be allowed to stand in the way of a measure which promises great benefit in so many directions and which promises relief to those of moderate means who are unfortunate enough to be sick.

THE IMPORTANCE OF ANTI-RABIC PROPHYLACTIC TREATMENT.

In January and February the number of cases of rabies in animals,—dogs, cats, sows and pigs,—increased in the Southern and Eastern Health Districts of Massachusetts to such a marked degree that it became necessary to order dogs in many communities to be restrained and not allowed to roam at large. The fact to remember in cases of rabies is that once a person develops symptoms of rabies, there is no hope. Every human case dies. For this reason the anti-rabic prophylactic treatment is the only hope to escape the disease when bitten or "licked" by a rabid animal.

It is necessary, in order to stamp out rabies, that all animals, dogs in particular, which show symptoms of rabies or are suspected of being "mad," or which have been bitten by "strange" dogs, be restricted by confining them for at least four weeks to watch for symptoms. "Strange" dogs not known in a community should be caught and disposed of unless bearing the owner's name.

In case a dog is suspected after biting a person, it should not be killed at once, but should be watched for a few days for the appearance of symptoms of rabies. After they appear, it should be killed without injury to the head and the head sent to the State Laboratory for examination of the brain. If the Laboratory reports that it is "suspicious" or "positive" for Negri bodies, the anti-rabic treatment should be instituted without delay. This treatment may be obtained free from the Massachusetts Department of Public Health through the State District Health Officers or by direct application to the Department. The product is furnished the Department by the U. S. Public Health Service.

The danger from a single rabid dog may be seen when one remembers that in Taunton, in February, one dog ran through the streets and bit twelve persons.

PERSONS BITTEN BY "POSITIVE" DOGS IN MASSACHUSETTS.

YEAR	PERSONS BITTEN	NO. TAKING ANTI-RABIC TREATMENT
1916	24	24
1917	26	26
1918	35	17
1919	45	42
1920	27*	26

* January to March 31.

It is an odd fact that there are more cases of animal rabies during the cold months than during the warm months. The communities will be fortunate indeed, however, if the cases of rabid dogs have not increased with the advent of spring and melting snows, for at that time dogs begin to wander farther afield.

CANDIDACY OF DR. HOMER GAGE.

The attention of physicians who are also Harvard graduates is called to the candidacy of Dr. Homer Gage of Worcester for the board of overseers of Harvard College on Commencement Day, June 24. The medical profession could have no better representative, and his breadth of view and various interests would make him a valuable member of the board, to which we sincerely hope that he may be elected.

ANNUAL MEETING OF THE A. M. A.—The next annual meeting of the American Medical Association will be held in Boston June 6 to 10, 1921. Dr. Fred B. Lund of Boston has been made chairman of the committee of arrangements.

MEDICAL NOTES.

COÖPERATION OF RIPE OLIVE PACKERS IN THE PREVENTION OF FATALITIES FROM BOTULINUS POISONING.—The Bureau of Chemistry of the Department of Agriculture authorizes the statement that it has met with a gratifying degree of coöperation on the part of packers of ripe olives in improving methods to such an extent that danger from botulinus poisoning in future packs will be eliminated. Five groups of deaths traced to poison produced by the organism known as *Bacillus botulinus* have occurred in New York City, Detroit, Michigan, Canton, Ohio; Memphis, Tennessee, and Kalispell, Montana. All of these cases were due to the consumption of ripe olives. No fatalities have been traced to green olives.

Very extensive investigations have been made by scientists from the Bureau of Chemistry with the coöperation of the packers and the packers have also employed specialists to study the causes of botulinus poisoning and the precautions which should be employed to prevent further difficulty. The experts agree that the trouble is not inherent in the type of container used. Whether the olives be packed in glass jars or in tin cans they can be rendered absolutely safe if proper precautions are taken to prevent the infection with bacteria during handling and if the packages when filled are sterilized at a sufficient temperature and for a sufficient period of time. It is entirely practicable to sterilize both glass containers and tin cans at a temperature high enough to insure absolute sterilization.

Unfortunately some packs of ripe olives put up in glass, as well as some in tin, during past seasons were not prepared with all the precautions now known to be essential and were not sterilized at a sufficiently high temperature, and some in glass were responsible for the fatalities. It is probable that of all the ripe olives on the market but an extremely small number contained *Bacillus botulinus*. Of more than 2,000 individual packages collected and examined in the Bureau of Chemistry but eight were found to contain *Bacillus botulinus*, and seven of these were from the output of one manufacturer and from one batch of his output. In addition to these eight, the Bureau has examined samples of some of the olives responsible for the fatalities and he has also found *Bacillus botulinus* in these specimens.

Since there is a possibility of danger from any ripe olive which has been insufficiently sterilized the Bureau of Chemistry has suggested to the industry that all ripe olives in glass or in tin wherever located be carefully inspected and that any which show the slightest degree of decomposition be destroyed. It has further suggested that all ripe olives which have not been processed at a sufficiently high temperature be returned to the packers for immediate reprocessing at a sufficient temperature to insure complete sterilization. With few exceptions, the olive packers have followed all suggestions made in the interest of the public safety, and by mutual agreement entered into by practically all of the packers, they are now taking steps to withdraw from the market all ripe olives in glass containers which have not

been sterilized at a sufficient temperature. Similar steps are being taken by some of the packers in the case of minced olive relishes, in view of the fact that one death due to the consumption of such a product has been reported. While concerted action to remove ripe olives packed in tin and processed at a low temperature has not been taken by the packers, the fact that spoilage in tin has so consistently resulted in making a "swell" out of the can constitutes a warning to the purchaser which is not often disregarded. There is no reason to anticipate danger from properly packed and processed ripe olives whether they be packed in tin or glass containers.

NEW JERSEY STATE HOSPITAL.—The forty-third and forty-fourth reports of the New Jersey State Hospital at Morris Plains, have just been received. The first covers the period from November 1, 1917, to June 30, 1918. During this time 3,140 patients were under treatment at the hospital, an increase of 38 over the preceding year; 455 new patients were admitted. There was a mortality rate of 4.77 per cent. of the total number. Of the patients admitted, 280, 143 men and 137 women, or 61.54 per cent., were suffering from their first attack of mental disease. Over 60 per cent. of those admitted were diagnosed as suffering from psychoses from which there is improbability of recovery; these include 146 cases of dementia praecox; 55 of dementia senile; 34 of dementia parietic; 11 of dementia organic; 18 of arrested physical development. Of the patients who recovered over 77 per cent. were admitted within six months of the onset of their psychoses; 88.63 per cent. were under treatment less than a year before discharged as recovered. This lends emphasis to the fact that early scientific treatment is as much a necessity for the alleviation of mental diseases as those considered physical in character. Various forms of diversional occupation have been employed to aid in the recovery of patients. Motion pictures, a circulating library, and newspapers have contributed to the happiness of the patients. Twelve nurses were graduated from the Training School in 1918, and seven in 1919.

During the year ending June 30, 1919, 3,336 patients were cared for at the New Jersey State Hospital; 613 new patients were admitted, the highest number of admissions dur-

ing any one year in the history of the institution. Nearly 63 per cent. of the patients admitted were alleged to be suffering from their first mental attack.

Of the occupations followed by those admitted, the largest single classification for the men was that of laborers, broadly stated, the number being 87. Among the women the largest number were housewives 161 (nearly 50 per cent.), housework 34, domestics 17, and housekeepers 11. Thus the women engaged in household duties constituted nearly 70 per cent.

Regarding the mental diagnosis of the patients admitted, 29.5 per cent. were diagnosed as dementia praecox, over 6 per cent. general paralysis and nearly 39 per cent. were diagnosed as manic depressive psychoses. Over 10 per cent. were diagnosed as suffering from mental conditions due to senility.

Of the 613 admitted, 340 were chargeable to the State and counties jointly, 128 to the State exclusively and 145 were supported either by relatives or from their own estate.

Of the alleged causes assigned for the psychoses the most general ones were excesses, 33; syphilis, 19; heredity, 20; worry, 22; senility, 22; childbirth, 10; climacteric, 14; and influenza, 17.

The physical conditions most often associated with mental disease were involved in the following cases: Syphilis, 44; arteriosclerosis, 59; nephritis, 18; and endocarditis, 27.

During the year there were 316 deaths, a percentage of 9.4 based on the total number under treatment; this is an abnormal percentage and is due in large measure to the influenza epidemic.

A large number of the patients are employed about the wards each day; smaller groups go to the laundry, the shops, kitchen and bakery. All the men who can be permitted the greater freedom are kept busy about the farm, gardens, greenhouses and grounds. Many of the women enjoy sewing, either on the wards or in the sewing room, and in this way much useful mending is accomplished, as well as the construction of new garments.

The Industrial Division proper consists of the Arts and Crafts Department for Men, the Arts and Crafts Department for Women, the Printing Department and the Bookbinding Department, and is under the general direction of one of the assistant physicians.

In the Print Shop is done all the printing

for the institution—forms, blanks, cards for indexing purposes, notices, signs, dietaries, ledgers and all the varied work required in a large hospital community. Included in the work of the Print Shop is the editing and publishing of a monthly paper, *The Psychogram*. Practically all the writing called for by this magazine—stories, news items, essays—is done by the patients.

NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY.—The nineteenth annual meeting of the National Association for the Study of Epilepsy was held on June 3, 1920, at the New York Academy of Medicine. At the morning session a presidential address was delivered by Dr. L. Pierce Clark of New York, and other speakers included Dr. William T. Shanahan, Superintendent of the Craig Colony; Dr. David F. Weeks, New Jersey, and T. E. Uniker, New York. A clinic was conducted by Dr. Arthur L. Shaw of Camden, New York. At the afternoon session a business meeting was held, and addresses were made in the afternoon and evening by the following physicians: Dr. Walter H. Kidder, New York; Dr. Smith E. Jelliffe, New York; Dr. J. Ramsay Hunt, New York; Dr. Chester A. Marsh, Indiana; Dr. Alfred S. Taylor, New York; Dr. Alfred Sachs, New York; Dr. Morgan B. Hodskins, Massachusetts; Dr. Harvey M. Watkins, Massachusetts; Dr. Foster Kennedy, New York; Major Frank B. Gilbreth of New Jersey.

BUBONIC PLAGUE AT VERA CRUZ.—A report received on June 1 from Vera Cruz states that an outbreak of bubonic plague has occurred in that city, eleven cases and five resulting deaths having been reported up to that time. The first case is believed to have developed on May 15. The focal point of the outbreak seems to be the warehouses of one of the docking companies. It is considered certain that rats transmitted the plague as a number of dead rodents have been found recently near these warehouses. Vera Cruz is completely cut off from the rest of the republic. Relief has begun to arrive from outside sources, however; a train arrived from Mexico City on May 31 with representatives of the sanitary corps and material with which to fight the plague, and President Wilson has offered to send hospital ships, nurses, doctors, and medical supplies immediately to Vera Cruz.

No third-class passengers are to be permitted to depart for America from any European country, especially Russia and other Eastern States, without medical examination. Disinfecting machines will be erected at such ports as Trieste and no emigrant will be allowed to embark without a certificate signed by an American medical inspector that he is free from disease. The British Government is also awake to the danger and is coöperating with General Blue in ensuring complete control of emigration. American officers reporting to General Blue have described the ravages of typhus and cholera, saying that in some villages sixty per cent. of the population have contracted disease. General Blue is expected to continue his trip to Trieste within a few days.

TRUDEAU SANATORIUM.—From the reports of the president and chairman of the executive committee it is evident that Trudeau Sanatorium, Saranac Lake, New York, is outgrowing its present accommodations and new buildings are needed for its various departments.

More than five thousand patients have been treated during its thirty-five years of existence and over half of them are living and well. By example and precept these patients have taught an ever-increasing circle of people that tuberculosis is curable and preventable.

Physicians, generally, have shown a deep interest in the institution and many have availed themselves of the opportunity to attend the public lectures. This is due, no doubt, to the increase of respiratory diseases during and following the war and influenza epidemic.

It is to be regretted that the limited capacity has made it necessary to postpone admission of patients to the Sanatorium in some cases, and to refuse several physicians enrollment in the school.

Several substantial gifts have already been received, and it is to be hoped that it will be possible, in the near future, to take care of all seeking admission.

BIRTH STATISTICS FOR 1918.—In the birth registration area of the United States, 1,363,649 infants were born alive in 1918, representing a birth rate of 24.4 per 1,000 population. Of this total number of infants born alive 1,288,711 were white and 74,938 were colored. The total number of deaths in the same area was 1,014,620, or 18.2 per 1,000. The births exceeded the deaths by 34.4 per cent. For every state in the

registration area, for most of the cities, and for nearly all the counties, the births exceeded the deaths in many cases by considerable proportions. The mortality rate for infants under one year of age averaged 101 per 1,000 live births. The foregoing are among the facts brought out by the annual compilation of birth statistics by the Bureau of the Census.

The birth registration area, established in 1915, has grown rapidly. It comprised in 1918, as in 1917, the six New England States, Indiana, Kansas, Kentucky, Maryland, Michigan, Minnesota, New York, North Carolina, Ohio, Pennsylvania, Utah, Virginia, Washington, Wisconsin, and the District of Columbia, and had an estimated population of 55,213,339, or about 53 per cent. of the estimated total population of the United States in that year.

The birth rate for the entire birth-registration area fell below that of 1917 by two-tenths of one per 1,000 population; but the death rate was greater by 4.1 per 1,000 than in 1917. Thus the excess of the birth rate over the death rate for 1918, which amounted to 6.2 per 1,000, was somewhat less than the corresponding excess for 1917, 10.5.

The infant mortality rate—that is, the number of infants under one year of age per 1,000 born alive—throughout the birth-registration area as a whole was 101 in 1918 as against 94 in 1917. This is equivalent to saying that in 1917 of every 11 infants born alive, one died before reaching the age of one year, whereas the ratio in 1918 was about one in ten. Among the 20 states these rates ranged from 64 for Utah to 140 for Maryland, and for the white population separately the lowest and the highest rates were 63 for Utah and 126 for Pennsylvania.

The infant mortality rates vary greatly for the two sexes and for the various nationalities. The rate for male infants for 1918, 111 per 1,000 live births, was nearly 23 per cent. greater than that for female infants, which was only 90.4. When the comparison is made on the basis of race or nationality of mother a minimum of 71.4 is shown for the infants with mothers born in Denmark, Norway and Sweden, and a maximum of 172.4 per 1,000 births for infants with mothers born in Poland, while for Negro children the rate was 163.

The reports from the registration area show the birth of 15,342 pairs of twins and 147 sets

of triplets in 1918—in all 30,123 live births, or a little more than 2 per cent. of the total number born.

The reports for 1,252,552 of the births occurring in 1918 contained information as to the number of children in order of birth. Of these reports, 345,027 were for the first child born to the mother, 264,964 for the second child, 192,339 for the third, 136,366 for the fourth, and 95,963 for the fifth. In the remaining 217,893 cases, or 17.4 per cent. of the entire number for which information on this point was obtained, the total number of children borne by the mother was 6 or more; in 38,343 cases it was 10 or more; in 1,820 cases, 15 or more; and in 58 cases, 20 or more. The total number of children ever born to the mothers of these 1,252,552 babies of 1918 was 4,109,309, or 3.3 per family. The reports for 1,189,682 mothers of 1918 contained information as to the entire number of children now living and gave a total of 3,461,110, or an average of 2.9 living children in each family.

BRITISH PHYSICIANS AS AMBASSADORS TO THE UNITED STATES.—In the issue of the *British Medical Journal* for March 20, attention is called to the fact that there is an interesting precedent for the appointment of a member of the medical profession to be the chief diplomatic representative of Great Britain in the United States. In a recent issue of the *Journal*, we commented editorially on the appointment of Sir Auckland Geddes, K.C.B., M.D., as ambassador to this country. The *British Medical Journal* points out that Sir Charles Vaughan, G.C.G.H., M.D., was appointed Envoy Extraordinary and Minister Plenipotentiary to the United States in 1825. He was the son of Dr. James Vaughan of Leicester and was born in 1774; he was thus eight years younger than his brother, Sir Henry Halford, physician to George IV, and for twenty-four years President of the Royal College of Physicians of London. Henry Vaughan inherited a large property on the death of Lady Denbigh, widow of his mother's cousin, Sir Charles Halford, and changed his name by Act of Parliament to Halford. Charles Vaughan, like his brother, was intended for the medical profession, and was educated at Rugby and Merton College, Oxford. He graduated B.A. in 1796 and M.A. in 1798, and became a Fellow of All Souls in the same year. He attended lectures on medicine

both in Edinburgh and London, and took the degree of M.B. in 1800. In the same year he was elected Radcliffe Travelling Fellow in the University of Oxford. He was thus able at an early age to indulge his master passion for seeing other countries. He got as far east as Bagdad and Persia, and after a winter in Russia reached England in 1806. Two years later he entered diplomacy as a member of Lord Stuart de Rothesay's mission to Spain. He carried dispatches during the Peninsular War, and in 1809 published a *Narrative of the Siege of Saragossa*. In the same year he became private secretary to the Secretary for Foreign Affairs, and in the following year was Secretary of Legation (later of Embassy) in Spain. In 1820 he became Secretary of Embassy in Paris, and in 1823 was made Minister Plenipotentiary to the Confederate States of Switzerland. In 1825 he was appointed Envoy-Extraordinary and Minister-Plenipotentiary to the United States, becoming at the same time a Privy Councillor. In 1833 he was created Knight Grand Cross of the Guelphs of Hanover. He left Washington in 1835. Of these years the *Dictionary of National Biography* says: "His services in the United States covered one of the most interesting periods in American history. He was intimate with such men as Story and Clay, and he had to watch such burning questions as that of the boundary with Canada, the position of the South American republics, the slave trade, and the tariff." He was sent on a special mission to Constantinople in 1837, and much of the remainder of his life was spent in travel. He died in London in 1849.

THE MEDICINE OF THE FUTURE IN ENGLAND.—The services of a number of whole-time medical officers are being sought by the British Missionary of Health. These doctors are to act as referees on questions of incapacity of insured persons for work, to give second opinions in diagnosis and treatment, and to organize arrangements for part-time medical referees for the area to assist in the administration of the Insurance Medical Service. The following comment on the project has been made by the medical correspondent of *The London Times*:

"This, it will be seen, is a very important departure, which, in fact, marks the beginning of the care of the public health as a whole by the State. Most important of all is the qualification attached to the appointment:—'Appli-

cants must be medical men of not less than 10 years' standing, and preference will be given to those having wide experience of general practice, especially among the industrial population.' If our national medical service be divorced from the needs and difficulties of general practice, it is bound to fail.

"The point, indeed, deserves to be considered by all public-minded citizens. Anxious discussions on it are going on in many parts of the country. It is pointed out that the hope of preventing disease lies in the early recognition of it, and that this power can be obtained in general practice, where the first signs of disease are revealed. The new administrator and—it is a great heresy—the new consultant must therefore be recruited not from specially chosen sections of the profession, but from the general practitioners.

"The research worker, too, must know what the conditions of this problem are. There is not too little, but too much, purely academic research in this country—at least in relationship to the utter paucity of clinical research. It is the man face to face with problems like that of pain, of breathlessness, of insomnia, who knows the kind of research which is required. As a single illustration, the action of few drugs is understood. Drugs are given daily in enormous quantities on the very flimsiest grounds. It is waste to say more of it. Nor will work in pharmacological laboratories afford us very much assistance. It is work at the bedside, observation, care, and a rigid control that will yield the secret. The general practitioner is the man who can perform this work.

"For the medicine of the future must be practical and it must be preventive. The day may come—will assuredly come—when it will be as great a crime to allow a case of heart disease to arise as it was during the war to allow a case of 'trench feet' to arise. And the same thing will be true of consumption and a host of other much dreaded maladies. The whole outlook of medicine is changed. The machinery must change also. We are returning to reality in the schools and in the sickrooms of the people."

DEPOPULATION IN FRANCE.—In previous issues of the JOURNAL we have commented upon the significance of the declining birth rate in France. The following interesting article published in the issue of *The Medical Press and Circular* for April 28, 1920, gives further warning of the peril which threatens the French nation if its present short-sighted policy is pursued:

"A manifesto published by a French contemporary states that in France, in 1918, there were 400,000 births as against 800,000 deaths, not counting the deaths attributable to military

service. If these figures are accurate, France appears to be in imminent danger of depopulation. One of the great causes of the falling birth rate is stated to be the practice of criminal abortion. The machinery for punishing this crime is so slow and cumbersome as to be easily evaded, so that although the number of women treated in hospitals for the effects of such malpractice appears to be large, only an average of twelve persons are convicted yearly in connection with abortion. The manifesto appeals for a revision of penalties and for their stringent application. The use of the word *avortouse* throughout suggests that women are chiefly responsible for this practice, and one notes that the manifesto is framed, not in the form of a moral protest against the inherent wrongness of abortion *per se*, but as a national appeal against the 'female abortionists who are depopulating the country.'"

In a subsequent issue of *The Medical Press and Circular*, a correspondent has made the following comments upon the preceding article:

"Its importance is as great in these islands as there; but here we are as a nation going to destruction blindly; in France every intelligent citizen has long known the fate which their deliberate conduct is bringing upon the country. It is amazing. The French are the most intelligent and most imaginative of European peoples; they are never tired of proclaiming their patriotism; and never fail to respond magnificently to the cry of 'the country's in danger,' as witness their conduct in the great war. All intelligent Frenchmen have been for many years fully alive to the fact that the safety of their country has depended upon population; and yet they have virtually all refused to make the sacrifices called for in the rearing of enough children to keep up their numbers to the required strength. The tale was unfolded fully, not for the first time, at the Paris Hygienic Congress in May, 1913, and was reported and commented upon in your paper. The late M. Bertillon, who had devoted a good part of his life in an attempt to rouse his countrymen, was the chief speaker from the ranks of science; M. Ribot and M. Bourgeois—veteran statesmen still at this day in the service of their country—delivered addresses from the point of view of practical statesmanship. They dilated upon France's peril; and this was soon to be demonstrated in the war. Then France had at home something less than 40,000,000 of people against Germany's 70,000,000. At that time France had 1,500,000 aliens on her soil, mostly seeking nationalization, and doing work which might have been done by

Frenchmen had there been enough of them. Many thousands of natives from her colonies were also employed in French mines. She might have supported many more millions at home and countless multitudes in her so-called colonies—all virtually without colonists. France was not, and it seems can never be, in a position to defend herself effectually without allies in a fight to a finish against her hereditary enemy. Had it not been for the support of Belgium and England at the outset of the war she would have been under the heel of Germany in a few weeks or months. Is it likely that France will for long be allowed to hold in dog-in-the-manger fashion her vast overseas possessions? They will be in time over-run if not conquered by more prolific if not more civilized races. We are in a closely similar position. The population question is vital. The State should at once grapple with it. Our Dominions and colonies could take and absorb our natural increase for hundreds of years. Without sufficient influx of British blood, how long will our vast domains continue truly British? Take one example. Australasia is bigger than the whole of Europe. Including New Zealand and the newly acquired German islands, the whole of these vast territories do not together hold 10,000,000 inhabitants. They offer room for hundreds of millions. It will, at the rate of increase during recent decades, take a hundred years for the present numbers to double themselves. It seems safe to prophesy that unless something like a miracle intervenes Australasia will within a century become Japanese—the Europeans being relegated to those parts, sufficient in extent for their comparatively small numbers, the climates of which suit them best.

"Finally, I would point out that a universal practice of limiting the numbers of a possible brood to one or two, constitutes a system of artificial selection which must promote survival of an inferior stock and cause racial deterioration."

THE RELATION OF DIET TO PELLAGRA INCIDENCE.—In the spring of 1916, a study was begun in seven cotton mill villages of South Carolina to determine the relation of factors of a dietary, economic, and sanitary character to the incidence of pellagra. The following summary of these investigations has been published in a recent Public Health Report:

The selected communities were typical cotton-mill villages and were of about average size; none had over 800 or less than 500 inhabitants. Only the families of white mill operatives were included in the study. Pellagra incidence was determined by a systematic bi-weekly house-to-house search for cases carried on continuously from April 15, 1916, to the end of that year.

Only patients with a clearly defined bilateral symmetrical eruption were recorded as having pellagra. Only active cases were considered.

Comparisons of diets of nonpellagrous with those of pellagrous households revealed that the non-pellagrous enjoyed a more restricted supply of foods of the "animal protein" group (lean meat, milk, including butter, cheese, and eggs). Increasing supplies of milk or of fresh meat were found associated, one independently of the other, with a decreasing pellagra incidence. No consistent correlation was found between varying supplies of either (1) maize meal, (2) wheat flour, or (3) the common dried legumes, and pellagra incidence. The results of the present study offered no support for the Zeist theory of the etiology of pellagra.

The potential energy in the average food supply of pellagrous households, though somewhat less than in that of nonpellagrous households, nevertheless conformed closely to accepted standards so that the fuel supply of the diet would seem in itself not to be an *essential* factor in relation to the incidence of the disease.

The quantity of protein in the average food supply of the pellagrous households was somewhat smaller than in that of the supply of non-pellagrous households of comparable economic status; but even after allowing for waste this exceeded somewhat the allowance considered by Chittenden as ample for physiological needs, so that a deficiency in total protein would seem not to be an *essential* factor in relation to the incidence of the disease.

The protein supply of the pellagrous households tended to include, on the one hand, a somewhat smaller proportion derived from animal foods and, on the other, a somewhat larger proportion from cereals and the common mature beans and peas, which would suggest that the protein mixture (amino-acid supply) in the diets of the nonpellagrous households is more likely to be physiologically adequate than that in the diets of the pellagrous groups.

The proportion of calories derived from carbohydrate and fat combined is essentially identical in the supply both of pellagrous and of non-pellagrous households. The supply of carbohydrates is, if anything, somewhat smaller in the diets of the pellagrous than in those of the non-pellagrous households, so that the production of pellagra would seem not to be de-

pendent on the excessive consumption of this nutrient.

The diets of the pellagrous households have a smaller average supply of the recognized vitamins than do those of the nonpellagrous, the disparity in supply being particularly marked with respect to the "fat soluble A" factor.

The mineral makeup of the diets of the nonpellagrous households will tend to be superior to, or, at least, is less likely to be deficient either as a whole or in any of its elements than that of the pellagrous households.

The indications afforded by this study suggest that the pellagra-preventive power of a milk or a meat supplement is due to the effect of a correction in the type of diet studied of a deficiency in supply either (1) of some amino-acid or acids, (2) of the ash or of some of its constituents, (3) of some as yet unknown essential (vitamine?), or (4) of all or of a combination or combinations of some of these. Conversely, they suggest that the pellagra-producing dietary fault is the result of some one or of a combination or combinations of two or more of the following factors: (1) A physiologically defective protein (amino-acid) supply; (2) a defective or inadequate mineral supply; (3) a deficiency in an as yet unknown dietary essential (vitamine?). The somewhat lower plane of supply, both of potential energy and of protein in the diets of the pellagrous households, though apparently not an essential factor, may, nevertheless, be contributory by favoring the occurrence of a deficiency in intake of some one or more of the essential dietary factors, particularly with diets having only a narrow margin of safety.

The indications afforded by this study clearly point to an increase in the availability of milk, particularly by increasing cow ownership, and of fresh meat, by all-year-round meat markets as important practical measures of prevention and control in communities of the character studied.

AWARD OF THE KATSURADA PRIZE AND MEDAL OF HONOR.—The Katsurada prize and medal of honor, established by the Japanese Government to be given periodically to some distinguished worker on tropical diseases, has been awarded to Professor Sadao Yoshida of Osaka Medical College, Japan. Professor Yoshida is

at present engaged in research work at the Parasitological Laboratory of the University of Illinois.

DEPARTURE OF GENERAL WILLIAM C. GORGAS.—General W. C. Gorgas, accompanied by Brigadier-General Robert E. Noble, has left for England, whence he will proceed to West Africa to study yellow fever.

PRESENTATION OF PORTRAIT OF DR. WILLIAM H. WELCH.—At a recent meeting of the University Club of Baltimore, there was presented a portrait of Dr. William H. Welch of the Johns Hopkins University and president of the club.

HONORARY ELECTION OF DR. W. W. KEEN.—The Royal Society of Medicine of London has elected as an honorary fellow Dr. W. W. Keen. Dr. Keen has been elected also as an honorary fellow of the American Surgical Association.

RETIREMENT OF DR. EDWARD T. REICHERT.—Announcement has been made of the retirement of Dr. Edward T. Reichert, professor of physiology in the Medical School of the University of Pennsylvania.

BOSTON AND MASSACHUSETTS.

AWARD OF THE FLATTERY MEDAL TO DR. THEOBALD SMITH.—The M. Douglas Flattery Medal and five hundred dollars in gold have been awarded by the Harvard Corporation to Dr. Theobald Smith, formerly of Harvard University, in recognition of successful scientific research resulting in the prevention of disease and the conservation of health. In explaining the meaning of Dr. Smith's discovery, Dr. Milton J. Rosenau is reported to have made the following remarks:

"Prior to 1893, when Dr. Smith made his discovery, disease germs were thought to have been transmitted through the air.

"During that year, however, while working on Texas fever in cattle, he discovered and proved that Texas fever was transmitted through the bite of an insect.

"Texas fever is a disease resembling malaria in humans. Malaria was afterwards found to be transmitted through the bite of a mosquito.

"Since then a large number of diseases were found to be transmitted by insects. For instance, a flea bite transmits bubonic plague and trench fever, and the bite of lice transmits the typhus germ."

"Dr. Smith was the first one to point out and prove that there are two kinds of tubercle bacilli, human and bovine. This discovery proved to us the necessity of pasteurizing milk.

"Dr. Smith also contributed to our knowledge of hog cholera, anaphylaxis, septic sore throat and other diseases of man and animals. He discovered several new parasites, especially one which causes blackheads in turkeys, a disease every turkey raiser knows to his sorrow. He also has discovered a number of laboratory devices.

"His discovery in regard to insect-borne diseases has been one of the most notable achievements in medicine and has resulted in the greatest good to humanity in prevention of diseases and conservation of health."

WEEK'S DEATH RATE IN BOSTON.—During the week ending midnight, Saturday, May 29, 1920, the number of deaths reported was 217 against 203 last year, with a rate of 13.99 against 13.29 last year. There were 47 deaths under one year of age against 33 last year.

The number of cases of principal reportable diseases were: Diphtheria, 28; scarlet fever, 58; measles, 253; whooping cough, 73; typhoid fever, 4; tuberculosis, 58.

Included in the above were the following cases of non-residents: Diphtheria, 7; scarlet fever, 12; measles, 4; whooping cough, 1; typhoid fever, 1; tuberculosis, 7.

Total deaths caused from these diseases were: Diphtheria, 3; measles, 2; whooping cough, 6; Tuberculosis, 26.

Included in the above were the following non-residents: Tuberculosis, 3.

COMPARATIVE HEALTH OF CITY AND COUNTRY CHILDREN.—An interesting report issued recently by the city health department of Boston shows that contrary to the popular belief, children brought up in the city are healthier than country children. The report contains the following statements by Dr. Woodward, Health Commissioner to the city:

"Recently compiled figures tend to show that the children of the rural class may be handicapped by more numerous physical defects than are city children, even the children living in the poorer portions of the city.

"Health surveys made in different parts of the United States purport to show the following percentages of physical defects among

children of both classes: City children, middle and wealthy class, 35 to 50 per cent.; city children, poor, 60 to 75 per cent.; rural children, 70 to 90 per cent.

"Among the causes that probably contribute to the relatively high percentage of defective children in rural districts may be suggested the lack of appreciation by the farmer of the value of sanitary advantages—at least lack of appreciation to an extent sufficient to lead him to provide such advantages, directly or indirectly, or through taxation, for his children. Another factor is probably the absence of prompt and adequate medical and nursing care."

OPPOSITION TO MATERNITY BILL.—At a recent meeting of the members of the House Committee on Ways and Means, Dr. Alfred H. Quessey of Fitchburg is reported to have opposed the bill to provide state aid in maternity cases, stating that it would put the medical profession under the direction of the state in the treatment of maternity cases and would not work to the advantage of the women supposed to benefit by it. Several petitioners for the legislation objected to the amendment, adopted by the Senate, which would permit only married women who have been mothers to be employed in carrying out the provisions of the act. Dr. Eugene R. Kelley, State Commissioner of Health, opposed this amendment because by it unmarried women doctors would be excluded from the work.

Dr. Merrill E. Champion, Director of the Division of Hygiene in the State health department, estimated that the cost of carrying out the provisions the first year would be \$197,000. If, however, the benefits were given to all the women in the state the cost would be approximately \$1,800,000 the first year.

Mrs. William Putnam Wood favored the legislation as greatly needed by the middle class.

NEW ENGLAND NOTES.

NEW ENGLAND WAR RELIEF FUNDS.—The following contributions have been acknowledged by New England branches of war relief funds:

French Orphanage Fund	\$592,841.40
French Wounded Fund	
(for the temporary hospital	
at Rheims	359,317.12
(for the American Memorial	
Hospital at Rheims)	1,532.99

The Massachusetts Medical Society.

WORCESTER DISTRICT MEDICAL SOCIETY.

THE annual meeting of the Worcester District Medical Society was held on May 12, 1920, at 19 Pearl Street, Worcester. The annual business meeting of the Society was transacted, with the election of officers for the ensuing year. An address, "Public Health and the General Practitioner," was delivered by Dr. Leslie R. Bragg of Webster. The annual dinner was held in the evening.

Miscellany.

RESOLUTION ON THE DEATH OF DR. ELMER ERNEST SOUTHARD.

At the meeting of the New England Society of Psychiatry on March 25, the following resolution was passed in regard to the death of Dr. Elmer Ernest Southard:

Resolved, That the New England Society of Psychiatry expresses its profound sorrow at the death of Dr. Elmer Ernest Southard, a distinguished member of the Society; that it records its recognition and appreciation of his tireless and talented service in his chosen fields of research, and of his many brilliant contributions to the science and art of psychiatry.

Dr. Southard had a magnetic and attractive personality, great intelligence, keen powers of observation, much knowledge of many scientific fields, philosophic tastes, highly developed reasoning powers, quick imagination and vision, almost unique skill in making new and valuable associations and correlations of apparently unrelated facts and principles, and the ability to feel and express subtle shades of meaning.

These marvellous gifts were lovingly dedicated to the search for scientific truth. He was taken away at the zenith of his power and influence. His inspiration of his students and co-workers will long continue. He was a most forceful and influential figure in American psychiatry.

UNITED STATES CIVIL SERVICE EXAMINATION.

BACTERIOLOGIST.

June 22, 1920.

The United States Civil Service Commission announces an open competitive examination for bacteriologist. A vacancy at St. Elizabeths Hospital, Washington, D. C., at \$2,500 a year, with temporary increase granted by Congress of \$20 a month, and maintenance, and vacancies in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles. For the present vacancy male eligibles are desired.

Competitors will not be required to report for examination at any place, but will be rated on the following subjects, which have the relative weights indicated on a scale of 100: (1) Physical ability, 10. (2) Education, training and experience, 90.

Under the second subject competitors will be rated upon the sworn statements in their applications and upon corroborative evidence.

Applicants must have graduated from a recognized medical college, and have had at least five years' bacteriologic and sanitary experience, including experience in the following lines: (a) Performance of autopsies; (b) Wassermann work; (c) urinalysis; (d) blood counts; (e) sputum examination.

Special credit will be given for graduate courses in bacteriology, pathology and general sanitary work in the U. S. Army or in domestic or foreign universities; also for experience in similar work in a hospital for the insane.

Applicants must have reached their twenty-sixth birthday on the date of the examination. Age limits do not apply to persons entitled to preference because of military or naval service.

Applicants must submit with their applications their unmounted photographs, taken within two years, with their names written thereon. Proofs or group photographs will not be accepted. Photographs will not be returned to applicants.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Secretary of the Fourth Civil Service District, 8th and E Streets, N. W., Washington, D. C., or to the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif., or Old Customhouse, St. Louis, Mo.

Applications should be properly executed, excluding the county officer's certificate, but including the medical certificate, and must be filed with the Secretary of the Fourth Civil Service District, 8th and E Streets, N. W., Washington, D. C., prior to the hour of closing business on June 22, 1920.

RECENT DEATHS.

DR. CHARLES JORDAN, next to the oldest Fellow of The Massachusetts Medical Society, died at his home in Wakefield, June 6, 1920, at the age of 91. Dr. Jordan was born in Saco, Maine, Oct. 17, 1828, graduated from Dartmouth Medical School in 1859, and settled in Wakefield, where he practised until he was retired in 1895. The oldest Fellow of the Society is Dr. Ira H. Eaton Chase of Haverhill, who joined in 1855.

DR. EDWARD H. CURRIER died at his home in Manchester, N. H., on June 1, at the age of 70 years. Dr. Currier was for many years chairman of the medical board of examiners at Concord.